CLAIMS

1) A purified protein, characterized in that:

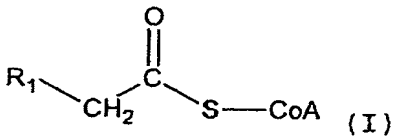
a) it has at least 40% identity, over its entire sequence, with the Pks13 protein of *M. tuberculosis*;

b) it has an acyltransferase domain (pfam00698), a keto acyl synthase domain (pfam02801 or pfam00109), at least one acyl carrier protein domain (COG0331 or COG0304), and a thioesterase domain (COG3319 or pfam00975);

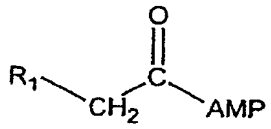
c) it catalyzes a Claisen condensation or malonic condensation between an acyl-CoA or acyl-AMP molecule and an acylmalonyl-CoA molecule.

2) The protein as claimed in claim 1, characterized in that it catalyzes a Claisen condensation or malonic condensation between:

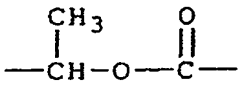
a) an acyl-CoA molecule of formula I, or an acyl-AMP molecule of formula Ia:



(I)

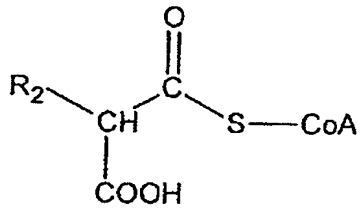


(Ia)

in which R_1 is a chain comprising from 6 to 68 carbon atoms, which may contain one or more C=C double bonds, and/or one or more *cis/trans*-cyclopropane rings, and/or one or more groups  and/or which may carry one or more side groups chosen from $-CH_3$, =O and $-O-CH_3$;

and

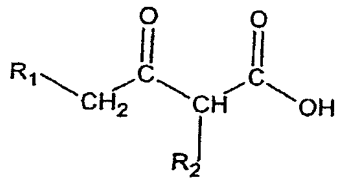
b) an acylmalonyl-CoA molecule of formula II:



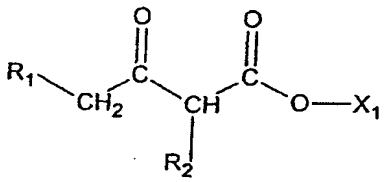
(II)

in which R_2 is a linear alkane comprising from 10 to 24 carbon atoms;

so as to form a β-keto acyl intermediate of formula III, or a β-keto ester of formula IIIa:



(III)



(IIIa)

in which R_1 and R_2 are as defined above, and X_1 is an acceptor molecule.

3) The protein as claimed in either one of claims 1 and 2, characterized in that it exhibits at least 70% identity with the sequence SEQ ID No.: 1 from *Mycobacterium tuberculosis*.

4) The protein as claimed in either one of claims 1 and 2, characterized in that it exhibits at least 70% sequence identity with the sequence SEQ ID No.: 2 from *Corynebacterium glutamicum*.

5) An expression vector, characterized in that it comprises a polynucleotide sequence encoding a protein as claimed in any one of claims 1 to 4.

6) A host cell, characterized in that it is transformed with an expression vector as claimed in claim 5.

7) The host cell as claimed in claim 6, characterized in that it is a prokaryotic cell.

8) A method for obtaining a protein as claimed in any one of claims 1 to 4, characterized in that it comprises:

- culturing a host cell as claimed in either one of claims 6 and 7; and
- purifying said protein from said culture.

9) Method for inhibiting the biosynthesis of the mycolata envelope, characterized in that it comprises inhibiting, in said bacteria, the expression or the activity of a protein as claimed in any one of claims 1 to 4.

10) The use of a protein as claimed in any one of claims 1 to 4, for screening for antibiotics that are active on mycolata.

11) The use as claimed in claim 10, for screening for antibiotics that are active on mycobacteria.